

FLEAS OF VERMONT

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Abstract Lists 33 species of fleas collected in Vermont by locality, date, host and numbers of each sex. Seven additional species taken adjacent to Vermont from hosts known to occur in Vermont are included. It is indicated that the distribution of *Hoplopsyllus glacialis lynx* may be influenced by the presence or absence of the cottontail rabbit *Sylvilagus*. *H.g.lynx* has not been found on the varying hare *Lepus* or the bob cat *Lynx* where *Sylvilagus* is found.

Early studies of fleas included few records from Vermont. Fox (1940) listed *Myodopsylla insignis* from Vermont and Fuller (1943) listed 13 species from Vermont. This paper lists 33 species and, while incomplete, modifies the known range of several species and in one case raises the question of the host as a distribution factor. All known Vermont records whether previously published or not are included. Species are arranged according to the classification proposed by Hopkins and Rothschild (1953 et seq.)

Family Pulicidae

- Ctenocephalides canis* (Curtis). Rutland, Aug. 1, 1934, from *Felis catus*, 4 ♂♂, 1 ♀; Saxton's River, Windham Co., Aug. 10, 1941, in house, 5 ♂♂, 3 ♀♀.
- Ctenocephalides felis* (Bouche). Rutland, Aug. 1, 1934, from *Canis familiaris*, 2 ♂♂, 2 ♀♀; Saxton's River, in house, Aug. 10, 1941, 2 ♀♀.
- Cediopsylla simplex* (Baker). Saxton's River, Dec. 25, 1933, from *Lepus americanus virginianus*, 2 ♀♀; Saxton's River, Dec. 23, 1934, same host, 1 ♂, 5 ♀♀; Chittenden, Rutland Co., Jan. 24, 1947, from *Vulpes fulva*, 7 ♂♂, 10 ♀♀; Mendon, Rutland Co., Jan. 10, 1952, from *Sylvilagus transitionalis*, 8 ♀♀; Saxton's River, Oct. 10, 1953, from *Peromyscus leucopus noveboracensis*, 2 ♂♂; Rutland, Oct. 23, 1954, from *S. transitionalis*, 3 ♂♂, 8 ♀♀; Shrewsbury, Rutland Co., Dec. 19, 1959, from *L. a. virginianus*, 8 ♂♂, 9 ♀♀; Mendon, Dec 19, 1959, 6 ♂♂, 8 ♀♀; Mendon, March 22, 1960, from *Lynx rufus*, 13 ♂♂, 24 ♀♀.
- Hoplopsyllus glacialis lynx* (Baker). Island Pond, Essex Co., Dec. 31, 1960, from *L. a. virginianus*, 6 ♂♂, 7 ♀♀; Troy, Orleans Co., Dec. 17, 1961, 1 ♂, 1 ♀; Lowell, Orleans Co., Dec. 18, 1961, 2 ♀♀ (Miller, 1962).
- Xenopsylla cheopis* (Rothschild). Springfield, Windson Co., June 22, 1944, from *Felis catus*; 1 ♂. (Collector, Robert McArthur, determined by Robert Traub).

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Family Vermipsyllidae

Chaetopsylla lotoris (Stewart). Mendon, May 2, 1934, from nest of *Tamiasciurus hudsonicus loquax*, 4 ♂♂, 5 ♀♀.

Family Hystrihopsyllidae

- Conorhinopsylla stanfordi* Stewart. Rutland, Feb. 25, 1951, from *Glaucomys sabrinus macrotis*, 1 ♀.
- Corrodopsylla c. curvata* (Rothschild). Mendon, June 9, 1945, from *Sorex sp.*, 1 ♂, (Traub collection); Mendon, June 1, 1951, from *Blarina brevicauda talpoides*, 1 ♂.
- Ctenophthalmus p. pseudagyrtes* Baker. Bread Loaf, Addison Co., from *B. b. talpoides*, 1 ♂; Middlebury, Addison Co., same host; Rutland, June 20, 1934, same host, 1 ♀; Sherburn, Rutland Co., Aug. 13, 1934, from *Napeozapus i. insignis*, 1 ♀; Mendon, Aug. 20, 1934, from *B. b. talpoides*, 1 ♀; Rutland, Oct. 23, 1941, from *Tamiasciurus hudsonicus loquax*, 1 ♂; Rutland, Oct. 23, 1941, from *Napeozapus i. insignis*, 1 ♀; Rutland, Oct. 23, 1941, from nests of *Peromyscus leucopus noveboracensis*, 6 ♂♂, 4 ♀♀; Rutland, Oct. 23, 1941, from nest of *Microtus p. pennsylvanicus*, 1 ♂, 3 ♀♀; Sherburn, June 8, 1945, from *Clethrionomys gapperi ochraceus*, 2 ♂♂; Rutland, May 25, 1946, from *P. l. noveboracensis*, 1 ♀; Lyndon Center, Caledonia Co., from nest of *M. p. pennsylvanicus*, 11 ♂♂, 8 ♀♀; (Donald H. Miller collection); Lyndon Center, Mar. 5, 1961, 1 ♂ (DHM); Lyndon Center, Apr. 5, 1961, from nest of *Microtus p. pennsylvanicus*, 1 ♂, 2 ♀♀ (DHM); Lyndon Center, Apr. 26, 1961, from *Condylura cristata*, 13 ♂♂, 11 ♀♀, collected by David Willey (DHM).
- Doratopsylla blarinae* C. Fox. Saxtons River, July 11, 1934, from *B. b. talpoides*; 1 ♂, 1 ♀; Saxton's River, July 14, 1934, same host, 1 ♂, 1 ♀; Rutland, July 18, 1934, same host, 1 ♂; Springfield, Aug. 3, 1941, same host 2 ♀♀; Lyndonville, Caledonia Co., Oct. 7, 1961, 3 ♂♂, 1 ♀ (Donald Miller).
- Hystrihopsylla tahavuaana* Jordon. Rutland, March 7, 1951, from nest of *Microtus p. pennsylvanicus*, 1 ♂, 1 ♀.
- Catallagia borealis* Ewing. Mendon, Dec. 4, 1960, from *Clethrionomys g. ochraceus*, 1 ♂, 1 ♀.
- Epitedia wenmanni wenmanni* (Rothschild). Mendon, Apr. 20, 1934, from *Mustela c. cicognani*, 1 ♀; Rutland, Oct. 3, 1941, from nest of *P. l. noveboracensis*, 3 ♂♂, 3 ♀♀; Rutland, Oct. 3, 1941, from nest of *M. p. pennsylvanicus*, 1 ♂, 3 ♀♀; Mendon, Dec. 4, 1960, from *C. g. ochraceus*, 1 ♂, 1 ♀; Lyndon Center, March 24, 1960, from nest of *M. p. pennsylvanicus*, 1 ♀.
- Epitedia wenmanni testor* (Rothschild). Rutland, Oct. 27, 1941, from nest of *P. l. noveboracensis*, 3 ♂♂, 3 ♀♀; Rutland, Oct. 31, 1941, 2 ♀♀.
- Tamiophila grandis* (Rothschild). Mendon, May 2, 1934, from *Tamias striatus lysteri*, 2 ♀♀; Saxton's River, July 2, 1934, from *Canis familiaris*, 2 ♂♂, 4 ♀♀; Saxton's River, Oct. 15, 1934, from *T. s. lysteri*, 1 ♀, Bishopp #22727; Rutland, Apr. 23, 1941, from nest of same host, 6 ♂♂, 8 ♀♀; Rutland, Nov. 10, 1941, from nest of same host, 3 ♀♀; Rutland, March 11, 1961, from *T. h. loquax*, 1 ♀.
- Nearctopsylla genalis genalis* (Baker). Mendon, Apr. 20, 1934, from *Mustela c. cicognani*, 2 ♀♀; Sherburn, July 27, 1934, from *Clethrionomys g. ochraceus*, 1 ♀; Saxton's River, Nov. 20, 1934, 1 ♀; Rutland, Dec. 14, 1946, from *B. b. talpoides*, 1 ♀; Mendon, June 1, 1951, same host, 1 ♀; Rutland, Nov. 5, 1951, from

M. e. cicognani, 1 ♀; Rutland, Nov. 24, 1951, same host, 1 ♂; Rutland, Nov. 11, from *B. b. talpoides*, 1 ♂; Saxton's River, Oct. 23, 1953, from *Sciurus carolinensis leucotis*, 2 ♂♂; Lyndon Center, Nov. 3, 1959, from *B. b. talpoides*, 1 ♀; (Collector, David Bouton, record supplied by Donald Miller); Rutland, Dec. 4, 1960, from same host, 1 ♂, 1 ♀.

Stenoponia americana (Baker). Rutland, March 3, 1940, from nest of *P. l. noveboracensis*, 1 ♂, 3 ♀♀; Rutland, March 25, 1946, from nest of same host 1 ♂, 2 ♀♀; Rutland, March 7, 1951, from nest of same host, 1 ♀.

Family Ischnopsyllidae

Myodopsylla insignis (Rothschild). Chittenden, Jan. 11, 1914, 1 ♀ (F. M. Allen); Brandon, Rutland Co., Aug. 11, 1934, from *Pipistrellus subflavus obscurus*, 4 ♂♂; Brandon, Nov. 24, 1934, from *Myotis l. lucifugus*, 1 ♂, 1 ♀, (Bishopp #22724-22725); Dorset, Bennington Co., from same host, 1 ♀; Castleton, Rutland Co., July 11, 1954, same host 24 ♂♂, 31 ♀♀.

Family Leptopsyllidae

Peromyscopsylla catatina (Jordan). Mendon, Oct. 1, 1934, from *Peromyscus maniculatus gracilis*, 4 ♂♂; Sherburn, Oct. 15, 1951, same host, 1 ♂, 1 ♀.

Peromyscopsylla hesperomys hesperomys (Baker). Brandon, Nov. 8, 1934, from *Pipistrellus s. obscurus* (the cave from which this bat was collected was inhabited by *Peromyscus m. gracilis*); 1 ♀; Rutland, Oct. 1, 1941, from nest of *p. l. noveboracensis*, 1 ♀; Rutland, Feb. 2, 1952, from *B. b. talpoides*, 1 ♂; Rutland, Apr. 26, 1965, from *M. p. pennsylvanicus*, 1 ♂, 1 ♀.

Family Ceratophyllidae

Ceratophyllus celsus celsus Jordan. Saxton's River, Aug. 10, 1961, from nest of *Petrochelidon albifrons*, 1 ♀.

Ceratophyllus gallinae (Schränk). Rutland, May 5, 1952, from nest of *Sialia s. sialis*, 1 ♀; Saxton's River, May 3, 1960, from nest of *Passer domesticus*, 1 ♀.

Ceratophyllus idius Jordan and Rothschild. Rutland, Oct. 22, 1954, from nest of *Iridoprocne bicolor*, 1 ♀.

Ceratophyllus riparius riparius Jordan and Rothschild. Mendon, Aug. 17, 1960, from nest of *Riparia r. riparia*, 1 ♂, 1 ♀.

Megabothris acerbus (Jordan). Rutland, Apr. 23, 1941, from nest of *Tamias striatus lysteri*, 1 ♀; Rutland, Nov. 4, 1941, from nest of same host 5 ♀♀; Rutland, March 7, 1951, from nest of same host, 2 ♀♀; Rutland, March 11, 1951, from *Tamiasciurus h. loquax*, 1 ♂; Island Pond, Essex Co., Aug. 17, 1953, from *Clethrionomys g. ochraceus*, 2 ♀♀; Rutland, Dec. 1953, from nest of catbird currently occupied by *Peromyscus l. noveboracensis*, 2 ♂♂.

Megabothris asio asio (Baker). Rutland, July 1, 1934, from *Microtus p. pennsylvanicus*, 1 ♂, 1 ♀; Rutland, Oct. 1, 1941, from nest of same host, 2 ♂♂, 7 ♀♀; Lyndon center, March 29, 1960, from nest of same host, 1 ♀ (Donald Miller).

Megabothris quirini (Rothschild). Mendon, May 4, 1945, 1 ♂, 4 ♀♀ (Robert Traub); Island Pond, Aug. 17, 1953, from *Microtus c. chrotorrhinus*, 1 ♀.

Monopsyllus vison (Baker). Saxton's River, March 21, 1934, from *Tamiasciurus h.*

- loquax*, 1 ♀; Rutland, Oct. 23, 1941, from nest of same host, 3 ♀♀: Lyndon Center, March 12, 1961, same host, 1 ♂, 3 ♀♀ (Donald Miller); Lyndon Center, Apr. 23, 1961, same host, 1 ♂, 1 ♀ (Donald Miller); East Burke, Caledonia Co., May 10, 1961, 1 ♂, 1 ♀, collector, Lionel Fisher (Donald Miller).
- Opisodasys pseudarctomys* (Baker). Mendon, Nov. 15, 1934, from *Glaucomys v. volans*, 1 ♂, 2 ♀♀; Mendon, Nov. 20, 1934, same host, 1 ♂, 1 ♀; Saxton's River Dec. 22, 1934, same host, 4 ♂♂, 6 ♀♀; Rutland, Jan. 4, 1948, from *Sylvilagus transitionalis*, 5 ♀♀; Rutland, Feb. 15, 1951, from *Glaucomys sabrinus macrotis*, 2 ♂♂; Mendon, June 1, 1961, from *Blarina b. talpoides*, 2 ♂♂.
- Orchopeas caedens durus* (Jordan). Shadow Lake, Orleans Co., Oct. 4, 1959 from *T. h. loquax*, 2 ♂♂, 2 ♀♀; collector, W. Randall (D. Miller); Lyndon Center, Mar. 5, 1961, same host, 1 ♂, 1 ♀, (D. Miller); East Burke, March 10, 1961, same host, 1 ♀, Collector, L. Fisher, (D. Miller); Lyndon Center, March 12, 1961, same host, 1 ♀ (D. Miller); Saxton's River, Nov. 27, 1960, from nest of same host, 1 ♂, 1 ♀.
- Orchopeas howardi howardi* (Baker). Saxton's River, Dec. 22, 1934, from *Glaucomys v. volans*, 1 ♂, 3 ♀♀; Springfield, May 19, 1941, from nest of *Sciurus c. leucotis*, 8 ♂♂, 15 ♀♀; Saxton's River, Sept. 1, 1953, from *G. v. volans*, 1 ♀; Saxton's River, Oct. 3, 1953, same host, 14 ♀♀ (Anne Nichols).
- Orchopeas leucopus* (Baker). Pittsford Mills, Rutland Co., from *Peromyscus m. gracilis*, 1 ♀ (Fuller, 1943); Mendon, June 1, 1934, from *P. l. noveboracensis*, 3 ♀♀; Sherburn, July 15, 1934, from *Clethrionomys g. ochraceus*, 1 ♂, 1 ♀; Mendon, Aug. 23, 1934, from *P. m. gracilis*, 2 ♀♀; Rutland, Rutland Co., Oct. 1, 1941, from *P. l. noveboracensis*, 4 ♂♂, 4 ♀♀; Rutland, Oct. 1, 1941, from nest of same host; 2 ♀♀; Rutland, Oct. 5, 1941, same host, 1 ♂, 1 ♀; Rutland, Nov. 1, 1941, nest of same host, 2 ♂♂, 8 ♀♀. Lyndon Center, March 20, 1960, from *P. m. gracilis*, 2 ♀♀ (Donald Miller); Lyndonville, Mar. 20, 1960, 1 ♀ (David Bouton, Donald Miller).
- Oropsylla arctomys* (Baker). Mendon, Apr. 17, 1934, from *Mustela frenata noveboracensis*, 1 ♂; Sherburn, July 27, 1934, from *Clethrionomys g. ochraceus*, 1 ♂; Greensboro, Orleans Co., Apr. 18, 1961, from *Marmota monax rufescens*, 31 ♂♂, 27 ♀♀ (Douglas Murray, D. Miller); East Burke, May 2, 1961, same host, 3 ♂♂, 6 ♀♀; (Douglas Murray, D. Miller); East Burke, May 6, 1961, same host, 1 ♂, 4 ♀♀ (D. Murray); East Burke, May 11, 1961, same host 3 ♂♂, 1 ♀ (D. Murray).

DISCUSSION

In addition to the 33 species and subspecies listed, at least seven other species taken nearby may be expected to be found in Vermont. These are:

Saphiopsylla bishopi Jordan, recorded in eastern New York from voles (Connor, 1960).
Epitedia faceta (Rothschild), collected in several neighboring states from squirrels, especially flying squirrels (Benton and Cerwonka, 1960).

Nycteridopsylla chapini (Jordan), reported from New York and Massachusetts, from the big brown bat, *Eptesicus fuscus*.

Peromyscopsylla scotti I. Fox, collected about 25 miles of the Vermont border at Albany, N. Y., and in Mass., from deer mice.

Peromyscopsylla hamifer hamifer (Rothschild), collected in Maine, New Hampshire, and Maryland, primarily from voles.

Odontopsyllus multispinosus (Baker), collected in Mass. and N. Y. from cottontail rabbits (*Sylvilagus* spp.).

Ceratophyllus diffinis Jordan, collected from nests of various birds in neighboring states, and from a robin in N. Y. (Parkes, 1954).

The most interesting recent addition to the list of fleas of Vermont is that of *Hoplopsyllus glacialis lynx* (Baker) (Miller, 1962). From my experience this species is not found where the cottontail rabbit, and its common flea, *Cediopsylla simplex*, occur. William Flanders of Island Pond, where *H. g. lynx* has been collected, writes (letter of Aug. 11, 1962): "I have a beagle, hunt rabbits two or three times a week throughout the season. I have never seen a cottontail rabbit in Essex Co. or one's tracks". Similarly, Dr. Allen H. Benton tells me that snowshoe hares in eastern N. Y. are heavily infested with *C. simplex* wherever cottontail rabbits occur, and he has been unable to collect *H. g. lynx* in that area.

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